

Work Order ID 84438

\*84438\*

Page 1

May-11-12 2:26:54 PM

Item ID: D2137 Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Decal - No Step  
 Start Date: 11/05/2012 Start Qty: 20.00 \*20\* Cust Item ID:  
 Required Date: 25/05/2012 Req'd Qty: 20.00 \*20\* Customer:  
 Reference:

Approvals: Process Plan: ML5 Date: 12/05/11 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D2137	JAN 29 1992

100		0.00							
*100*									
Purchasing	Memo	0.00							
Purchasing	Issue P/O <u>16964</u>								
	Make per Dwg 2137								

110	Receive & Inspect for Damage & Mat'l Certs	0.00							
*110*									
Packaging	Memo	0.00							
Packaging									

120	QC6- Inspect dimensions to drawing	0.00							
*120*									
QC	Memo	0.00							
Quality Control									

CL 12/05/11 20

12/05/11 (20)

counted  
(720)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Work Order ID 84438

\*84438\*

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May-11-12 2:26:54 PM

Item ID: D2137

Accept

\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Decal - No Step

Start Date: 11/05/2012 Start Qty: 20.00

\*20\*

Cust Item ID:

Required Date: 25/05/2012 Req'd Qty: 20.00

\*20\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <u>GA</u>	0.00							
*130*									
Packaging	Memo	0.00				20			Jac 12/5/23
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
*140*									
QC	Memo	0.00							12/5/25
Quality Control									

MLJ 12/05/23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

May-11-12 2:26:58 PM

Page 1

Work Order ID: 84438

**\*84438\***

Parent Item: D2137

**\*D2137\***

Parent Item Name: Decal - No Step

Start Date: 11/05/2012

Required Date: 25/05/2012

Start Qty: 20.00

Required Qty: 20.00

Comments: IPP: B02.02.01 Added step 3 and Inspection level 21 SM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2137P <b>*D2137P*</b> Decal - No Step		Purchased	No			100	Each	0.0000	1	20		4/4/16 (20)	

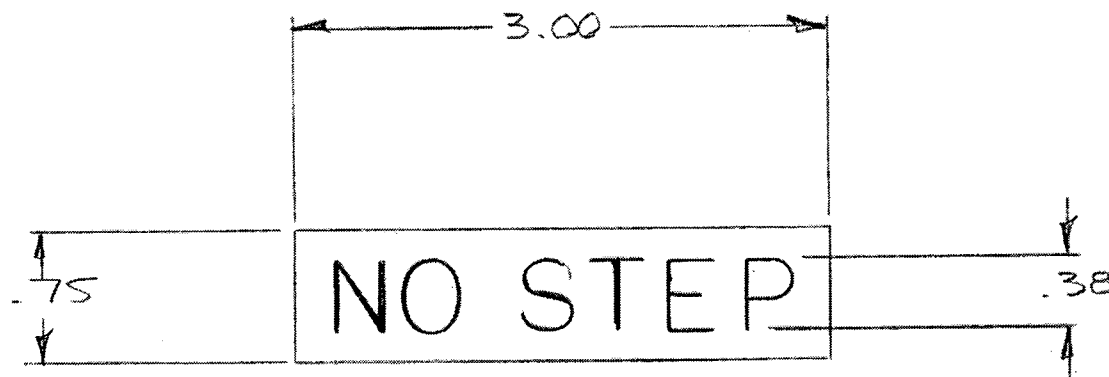
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

NO. 04438 MLJ  
12/05/11

ALTERNATE MATERIAL:

3M 7 MIL MASKING FILM #8522CP  
SILVER OR WHITE ON BLACK

off 00.09.05  
CP 00.09.05

MATERIAL: 3M POLYESTER

NATURAL (SILVER OR  
WHITE) ON BLACK.  
.003 THICK



REVISION	THIS DRAWING IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT THE PERMISSION OF DART AERO.		RIVET CODE SHALL BE PER NAS 623	PART NO.	ITEM	DESCRIPTION	MATERIAL	SPEC/VENDOR
DRAWN			BASIC CODE	DIA. DASH NO. W-HEAD NEAR SIDE F-HEAD FAR SIDE		CONTRACT NO.	DART DART AERO ACCESSORIES INC. VANCOUVER CANADA	
APPROVED			0-DIMPLE DASH NO. OF SHEETS C-COUNTERSINK	LENGTH DASH NO. W-SPOTWELD		DRAWN	DATE	
	REQUIREMENTS — UNLESS OTHERWISE SPECIFIED		BASIC CODES		DESIGN		92	
	GENERAL		81-MS20470AD 90-MS20426AD		STRESS		TITLE	
DESCRIPTION OF CHANGE	1. DIMENSIONS ARE IN INCHES 2. SURFACE ROUGHNESS 125 3. REMOVE SHARP EDGES .015 MAX 4. THREADS PER MIL - S - 32x3 5. HOLES PER AND 10087		1. TOLERANCES — JIS B 0201 2. ANGLES XXX ± .010 3. PARALLELISM .0075 4. ECCENTRICITY .005 MAX 5. SYMMETRY ABOUT ALL MTC CENTRE LINES .005		CHECKED		CODE	
REPORT ALL DISCREPANCIES — DO NOT SCALE					CLIENT		D2137	
					SCALE		SHT 1 OF 1	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Studio de Lettrage

210 Main Street W  
Hawkesbury, Ontario K6A 2H6

## INVOICE

Invoice No.: 17908  
Date: 05/15/2012  
Ship Date: 05/15/2012  
Page: 1  
Re: Order No. WO7359

### Sold to:

Dart Aerospace Ltd  
1270 Aberdeen  
Hawkesbury, Ontario K6A 1K7

### Ship to:

Dart Aerospace Ltd  
Hawkesbury, Ontario

Business No.: 82500 7651 RT0001

Item No.	Unit	Quantity	Description	Tax	Unit Price	Amount
20			Autocollant D2137P	H	2.25	45.00
10			Autocollant D2258-160P	H	6.00	60.00
10			Autocollant D2258-200P	H	6.00	60.00
10			Autocollant D2258-220P	H	6.00	60.00
12			Autocollant D3952-1P	H	8.00	96.00
12			Autocollant D4086-200P	H	10.00	120.00
			PO# 16964			
			H - HST 13%			
			HST			57.33
			PST Exempt: #6122-5207			
826572						
Studio de Lettrage HST: #825007651 RT0001						
Shipped By:				Tracking Number:		
Comment:				Total Amount		498.33
Sold By:						



## Product & Instruction Bulletin 8522

Release 1, Effective September 2008

See *Bulletin Change Summary and end of Bulletin*

This Bulletin now includes Instruction Bulletin 4.23

# Scotchcal™ Changeable Opaque Imaging Media 8522

## Product Description

## Recommended Types of Graphics and End Uses

### For Thermal Inkjet Printing

This durable, 7 mil, opaque, changeable film is optimized for use with selected thermal inkjet printers and inks. Ink dries quickly on the film. When overlaminated, it is warranted for medium term, outdoor weatherable graphics, and long term indoor graphics.

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire Bulletin for details.

- First surface images (the image is on top of the film) for opaque posters and signs, including:
  - Graphics for vans, personal vehicles, trucks and buses
  - Novelty posters
  - Retail and point-of-purchase displays
  - Information graphics such as maps and directories
  - Entertainment promotions in museums, zoos, parks, theatres, sports venues
  - Education and presentation graphics
  - Legal and courtroom exhibits
- For flat or simple curved surfaces, with or without rivets, used in vertical ( $\pm 10^\circ$ ) applications

## Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs or recommend other products.

### Unsuitable End Uses for This Product

- Not for electronically cut individual letters and numbers
- Fleet applications in areas that use salt for winter road maintenance
- Application to non-warranted substrates, including wallboard
- Applications subjected to gasoline vapors or spills
- Application to corrugated or highly irregular surfaces or sharply raised areas
- Graphics applied to stainless steel, including stainless steel vehicles
- On flat surfaces with rivets, tenting of 4 to 10 mm around rivets may be expected; rivets may be cut around to eliminate tenting.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

## About Water-Based Inkjet Technology

Standard inkjet technology is water based. Water-based chemistry is susceptible to the extremes of heat and humidity. This is a factor in most product constructions on the market. Read the Fabrication, Shelf Life and Storage sections in this Bulletin. Staying in the middle of these ranges always provides optimum performance.

## Compatible Products

### 3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

This Bulletin provides details about the base film and construction options and warranty. Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in **3M Related Literature** at the end of this bulletin.

### 3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

#### Film

- 3M™ Scotchcal™ Opaque Imaging Media 8522

#### Overlamine

- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520

#### Printers and Inks

HP Designjet Printers	HP Inks
<ul style="list-style-type: none"> <li>• 2500CP and 2000CP</li> <li>• 2800CP and 3800CP</li> <li>• 3500CP and 3000CP</li> <li>• HP Designjet 5000 and 5500</li> </ul>	<ul style="list-style-type: none"> <li>• Designjet CP Ink System UV (pigment-based)</li> <li>• Designjet CP Inkjet System (imaging ink)</li> </ul>
<ul style="list-style-type: none"> <li>• Z6100</li> </ul>	<ul style="list-style-type: none"> <li>• HP 91 Vivera Ink System</li> </ul>
Epson Printers	Epson Inks
<ul style="list-style-type: none"> <li>• Stylus Pro 9500</li> <li>• Stylus Pro 10000 printer</li> <li>• Stylus Pro 10600 printer</li> </ul>	<ul style="list-style-type: none"> <li>• Archival Inks</li> </ul>

## Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

Characteristic	Description
Media	7 mil, white, opaque graphic film
Liner	Low-slippage, lay flat paper
Adhesive	Changeable, pressure sensitive
Thickness	<b>Media with adhesive:</b> 7.5 to 8 mil (nominal)
Warranted application substrates	See next page.
Application surfaces	Flat or simple curved surfaces, with or without rivets, used in vertical ( $\pm 10^\circ$ ) applications (no corrugations)
Application temperature range	28° to 110°F (-2° to 43°C) (air and surface)
Removable	For up to one year; see Warranty Information

Characteristic	Description
Warranted application substrates	<p>Some substrates may "out-gas", resulting in tiny bubbles throughout the surface of the graphic. For maximum performance, be sure the substrate you select is properly cleaned and prepared as recommended by the manufacturer. See Instruction Bulletin 5.1 for additional information.</p> <ul style="list-style-type: none"> <li>• Alodine (anodized aluminum)</li> <li>• Automotive panels (automotive painted steel)</li> <li>• Fruehauf (painted aluminum)</li> <li>• FRP (fiberglass reinforced plywood)</li> <li>• Glass</li> <li>• Imron® (polyurethane-painted metal panel)</li> <li>• Acrylic</li> <li>• Sintra™ board</li> </ul> <p>Note: Use on any other substrate is strictly on a graphics manufacturer and customer test and approve basis. Test for both adhesion and removal characteristics. The plasticizer in some banner materials may migrate. This may cause the edge of the graphic to peel or lift off of the banner. For optimum performance, follow the guidelines in the section, Creating A Laminated Overlap, on page 4.</p>

## Warranty Information

The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor. **The warranties in the following table(s), given in years, are for finished graphics exposed in a vertical exposure in the United States except the Desert Southwest.** See the warranty sections following this table for additional information.

### 3M™ MCS™ Warranty Durability for Finished Graphics

Construction (film and overlamine on warranted substrate)	HP Printers & Inks		Epson Printers & Inks		Removal
	Outdoor	Indoor	Outdoor	Indoor	
8522/8519	3 years	5 years	2 years	5 years	1 year without chemical strippers or tools
8522/8520					

### Warranty and Limited Remedy

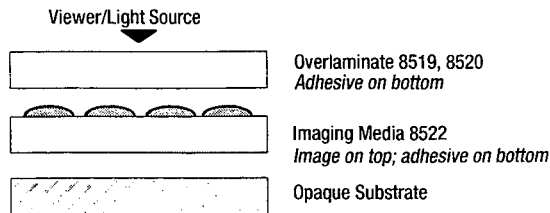
The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade: all 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. **In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.**

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

## Graphic Construction Options

### Opaque Graphics

Opaque graphics made with imaging media 8522 require an overlamine and an opaque substrate.



### Fabrication

Different combinations of shop temperature and humidity can affect the handling of the media, the protective finish and the printed graphic. For optimum performance, use the middle of each of these ranges whenever possible.

#### Shop Temperature

Acceptable: 60° to 95°F (15° to 35°C)  
Optimum: 65° to 73°F (18° to 23°C)

#### Shop Humidity

Acceptable: 20% to 80%  
Optimum: 45% to 60%

#### Condition the Media Before Use

These steps are especially important if you are operating outside the conditions recommended under Fabrication, above.

- Leave the media in its original packaging until you are ready to condition and use it.
- The day before you need it, remove the media from the box and remove the plastic.
- Condition the media for 24 hours in the same environment as the printer.

### Printer Settings for Optimum Quality

Refer to your Hewlett Packard printer manual for detailed operating instructions.

The quality of a printed image depends on a combination of factors: correct media selection, printing software and raster imaging processor (RIP), shop conditions, etc.

The printers qualified to use this media have print mode options that are programmed specifically for these media. Current charts that show the various modes and printing dpi, and the quality results you can expect are available at [www.hp.com](http://www.hp.com) under the website's support section. We recommend that you print the same image at all of these settings to determine acceptable print and productivity results.

The highest quality settings are usually desirable for backlit applications.

The correct media selection makes most other necessary adjustments to the printer.

- For the HP DesignJet CP 2000 or 3000 series printers, select the **Opaque Vinyl UV** setting.
- For the HP Designjet 5000 series printers, select the **3M Changeable UV** setting or the **HP Durable Gloss UV** or **HP Colorfast Vinyl** setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

- For the HP DesignJet CP 2000 or 3000 series printers, select the **Opaque Vinyl UV** setting.
- For the HP Designjet 5000 series printers, select the **3M Changeable UV** setting or the **HP Durable Gloss UV** or **HP Colorfast Vinyl** setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

## Drying Guidelines

Usually, the media can be laminated within 10 minutes after printing. However, especially in high humidity conditions, we recommend waiting 15 to 30 minutes before laminating.

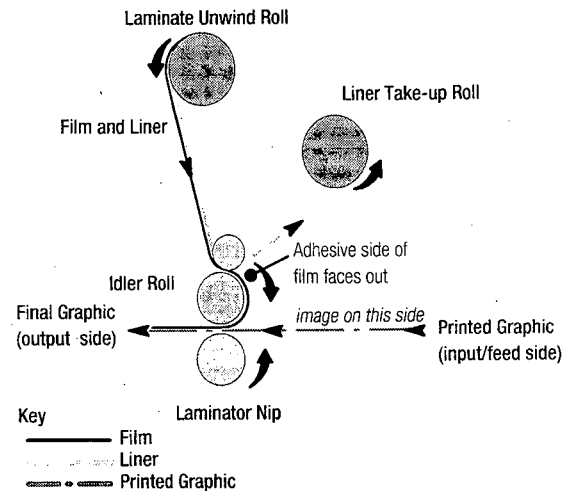
Use care when handling graphics that have not been laminated to avoid scratching and abrasion.

Graphics made with this media and ink combination typically may be wound directly on a take-up roll after printing.

## Overlamine

Whether or not you want a warranted graphic, an overlamine is recommended to enhance durability, especially in outdoor applications.

FIGURE 1  
Typical Laminator Thread-up



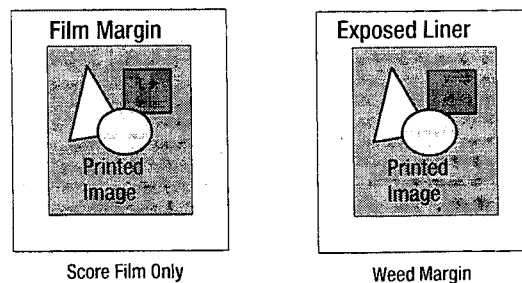
## Creating a Laminated Overlap

Creating a laminated overlap helps ensure that the graphic does not peel or lift away from certain banner materials that may be subject to plasticizer migration. This method may also be used for flat, rigid or flexible sign applications.

1. Print the graphic as usual.
2. On all sides of the graphic, score *the film only* to the correct, final graphic dimension *without cutting through the liner*.

Weed away the excess film, leaving the bare liner exposed around the graphic. See FIGURE 2.

FIGURE 2  
Trim and Weed Film Margin Only



3. Laminate the graphic as usual (see page 5), making sure that at least one inch of the bare liner is covered by the laminate. See FIGURE 3.

\*\*\*\*Certificate of Conformity\*\*\*\*

Customer:

Studio Lettrage

Purchase Order #:

16941

Packing Slip #:

WPH 7330

Part #:

D3952-3P

Serial #:

Description:

Quantity:

Certification:

We hereby certify that:

1. The above the listed items were manufactured, repaired and/or inspected in accordance with applicable drawings and/or specifications;
2. All work was accomplished in accordance with the Dart Aerospace Purchase Order;
3. Results of all inspections, chemical or physical tests, as well as other evidence, which shows the acceptability of raw materials, parts and/or assembly components are on file and available for inspection at any time.

Authority:

3m

APPROVAL: Sandy collin

Signature:

Sandy Collin

Title: Project Coordinator

DATE:

14 mai 2012